

# LCN Fund Full Submission

## Supplementary Answer Form

Tick if this answer is Confidential: ☐

Tick if this answer has been provided verbally: ☐

Project code:	UKPNT205	Question Number	UKPNT205-19
Question date	12 September 2013	Answer date	16 September 2013
Submission section question relates to	Appendix B – Maps and Network diagrams		
Topic	Technical		
Question	Please provide evidence of load growth in trial area. Where are the peaks?		
Notes on question			
Answer	<p>Studies were carried out on 45 secondary substations feeding the Bromley-by-Bow area, a possible recruitment area for V-CEE (those with RTU functionality).</p> <p>Refer to Appendix B. The diagrams depict RTU equipped secondary substations within the possible recruitment area. All nodes are filled with a colour representing a particular level of asset utilisation. The utilisation level range is set at 0% to 100%, emphasising those sites operating out of firm (or very close to it) at peak. The values upon which utilisation is determined correspond to peak kVA reached by the transformer over a set period. In this case, period is set at one year – January 2012 to January 2013.</p> <p><b>Figure 3: Transformer Utilisation Peak:</b> Five secondary sites are shown to operate above rated capacity at some point during the year of 2012. This highlights maximum load on the apparatus, yet it does not depict a true view over a sustained period.</p> <p><b>Figure 4: Transformer Utilisation Mean:</b> Shows each site and the utilisation corresponding to mean kVA reached by the transformer. Clearly</p>		

some sites witness more consistent levels of load than others over a one year period.

At present, none of the RTU equipped sites are due for a transformer upgrade. However, this area of London is continuing to grow, potentially increasing demand and pushing some of the secondary sites out with their limits.

Looking at the Planning Load Estimates for the primary substations that feed the area, an average annual winter peak growth of 0.5 MW [See attached for Planning Load Estimates table] at each primary site can be defined (around 0.9% peak growth). Some schemes are in place to balance this load increase at primary level, but not at LV level. Thus, secondary sites will see some of this growth (not all as a portion will be linked to Industrial and Commercial HV customers).

Approximately five of the sites have a peak load close or equal to apparatus rating. Hence, these sites will require upgrades during RIIO-ED1; assuming a 0.9% winter peak load growth evenly distributed across secondary sites.

Detailed information on these five sites are below:

SECONDARY SUBSTATION	Substation Number	Apparatus Rating	PRIMARY SUBSTATION	Where are the peaks?
CULLODEN ST SCHOOL	66030	500kVA	GLAUCUS STREET	Winter peak – 490kVA
IDA ST R O LANGDON HSE	66034	500kVA	GLAUCUS STREET	Winter peak – 450kVA
BROWNFIEL D ST OPP 62	66044	500kVA	GLAUCUS STREET	Relatively constant over year – 420kVA with 500kVA peak
BROMLEY HIGH ST WARREN	66064	500kVA	BOW 11kV	Winter peak – 480kVA (large difference between season loads)
BURDETT RD R O CRYSTAL	64064	500kVA	SIMPSONS RD	Relatively constant over year – 400kVA with 480kVA peak

**Table 1:** Secondary substation details in the potential recruitment area of Bromley-by-Bow

Some sites not peaking at rated capacity operate at an average load of 75% firm capacity or greater. Growth over ED1 may result in these sites operating at an average of 80 to 90% which could lead to reinforcement. It may be possible to postpone reinforcement by reconfiguring the network, but transparency at LV level is presently limited.

	<p>The main conclusion to draw from this is that we are not claiming that there is particular correlation between areas of high fuel poverty and the performance of the network or the need for reinforcement. Reinforcement of secondary substations is required from time-to-time and energy reduction and demand shifting by the customers in that area will help to defer that need.</p>
Attachments	UKPNT205-19 attachment
Verbal Clarifications (Consultants )	